

docker

Understanding the Business Value of Docker Enterprise Edition

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This paper will explore the impact of the digital transformation and how Docker Enterprise Edition can help companies unlock its value. This paper will look at specific areas where Docker Enterprise Edition can both save companies money and help make the business more efficient and competitive, and highlight case studies of companies who are already using Docker Enterprise Edition.



Shift to Hybrid Cloud



10 Billion Devices

The Digital Transformation

A massive digital transformation is underway. Everything is connected, and every business service needs to operate around the clock. Enterprises are making fundamental changes to way they work that are pushing traditional infrastructure and applications to the breaking point. The transformation is driven by five big factors:

- **Growth in devices.** In 2007, the year the iPhone was introduced, there were approximately one billion PCs and 100 million smartphones worldwide. Today, there are over 10 billion devices.¹
- **Mobility of everything.** The digital transformation is driving the need for users, devices, applications and data to be mobile and accessible inside and outside the organization.
- **Applications shifting to microservices.** Applications are changing rapidly from monolithic architectures to loosely coupled microservices architectures that stitch together multiple applications — possibly even across organizations.
- **A shift to the [hybrid] cloud.** Workloads are also moving to cloud, and enterprises increasingly want a hybrid model where applications and data can span on-premise and the cloud, or even span multiple clouds.
- **Exponential data growth.** In 2013, there was an estimated 4.4 zettabytes [ZB] of data globally. By 2020, that's expected to hit 44 ZB; and by 2025, 180 ZB.²

What the Digital Transformation Means

This completely changes the way customers interact with technology, how they expect to interact with businesses, and how they need to invest in IT infrastructure. The rapid growth of devices, data, and applications, combined with the “always connected” customer mentality raises the stakes significant for companies.

¹ Source: Statista estimates for [global installed base of PCs](#) and [global installed base of smartphones](#); Gartner estimates for [connected IoT devices](#). Total smartphones, PCs and other connected devices in 2016 are estimated to be over 10 billion.

² Source: [IDC](#)

Agility is more important than ever. Businesses need to develop, deploy, improve, secure and fix applications, data and infrastructure quickly — sometimes in hours. Yet existing infrastructure and applications — even systems that were architected and implemented 4 or 5 years ago — can't keep up with the pace of the digital transformation.

We Still Need “Legacy” Infrastructure and Applications. How Can We Modernize Them?

For decades, companies have built and implemented monolithic applications such as ERP, financial or manufacturing systems, to support critical business functions and systems of record. Enterprises can't afford to abandon these applications, but also can't afford to crawl when the digital transformation means they need to fly.

The inertia of existing applications and infrastructure prevent organizations from taking full advantage of the digital transformation. We need to move quickly, but making changes to legacy infrastructure is risky. Changes affect everything in the stack — networking, system resources and runtimes — which means even slight configuration variations can create issues. What ran on one build of Ubuntu Linux may not run on a slightly modified build. As a result, changing anything in the stack still requires a painfully slow and deliberate testing and validation process.

Virtualization has helped by isolating the stack into a virtual machine [VM] and making the infrastructure more agile. But the applications have remained monolithic with multiple, intricate dependencies. Moving applications across systems still forces IT to test different configurations and move slowly, even when the business can't afford to be slow.

Organizations need a way to accelerate change while bridging the gap between legacy systems and new architectures.

Docker Enterprise Edition Provides an Answer

Docker Enterprise Edition is the container management and security platform that gives existing applications the ability to run in containers and work the way users expect in the mobile and digital world. Docker provides agility, portability and security for all applications, while optimizing costs for the business.

When an application is packaged into a container, it includes everything that's required to make the software run. This fundamentally solves the “works on my machine” problem that developers often face when shipping their code to a different environment like staging that has different dependencies than their workstation. Containers are efficient, lightweight, self-contained systems that guarantee applications will always run, regardless of where they're deployed.

Organizations need a way to accelerate change while bridging the gap between legacy systems and new architectures.

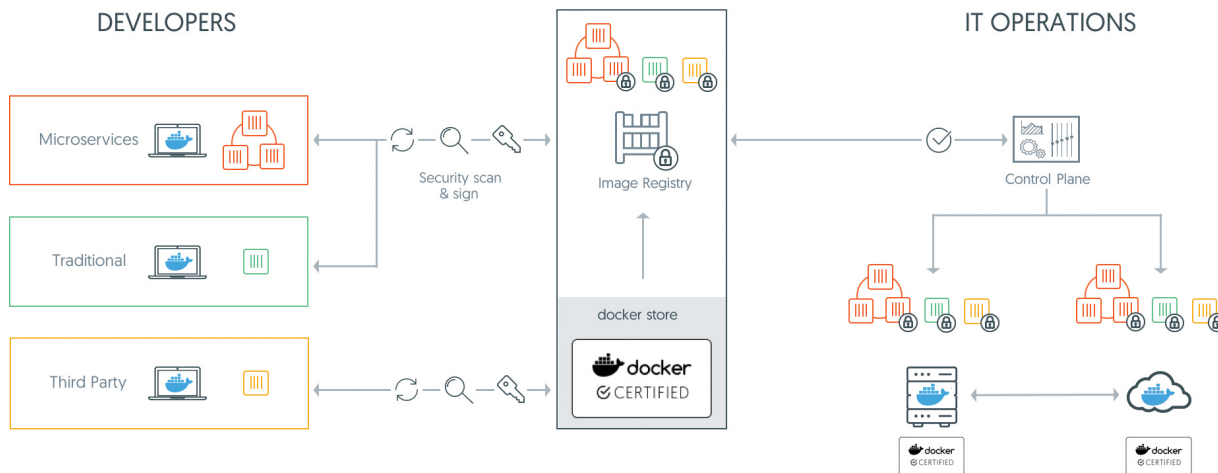


Figure 1: Docker Enterprise Edition delivers Containers as a Service for legacy, modern and third party applications on hybrid IT infrastructure.

Unlike VMs which include a full operating system, containers share the kernel of an operating system instance, so they use less system overhead. Because containers are lightweight, they are also fast.

Docker Enterprise Edition provides an integrated platform to deploy, manage and secure legacy, modern and ISV applications with a single framework. Using containers as the standardized packaging format with common tooling across the dev and IT spectrum, organizations can more easily build, secure and deploy any applications. Legacy applications in particular benefit from modernization with Docker, letting IT modernize the infrastructure and applications separately at their own pace.

The CapEx and OpEx benefits of Docker Enterprise Edition



Consolidate VMs SAVE MIN 25%



Maintenance & Support Save 10X



Go Bare Metal SAVE MIN 40%



Reduce SW License Costs



Deploy Apps 75% Faster

Understanding The Value of Docker Enterprise Edition

Docker Enterprise Edition reduces IT infrastructure costs and increases efficiency in three key areas: Infrastructure cost savings and optimization, developer productivity, and IT operations efficiency.

Infrastructure Costs Savings And Optimization

Increase application density and consolidate servers and VMs

Even heavily virtualized datacenters are still plagued by low server utilization rates, often below 50 percent. While IT has been able to consolidate VMs onto fewer servers, each application requires its own VM and operating system.

By simply “containerizing” applications and running the containers in a single VM (rather than running each application in its own VM), companies have been able to reduce compute resources by 25 percent or more for the same workloads.

Docker Enterprise can also run directly on bare metal servers with just a host OS — no hypervisor or virtual machines. This can reduce compute resource requirements by 45 percent or more. Either approach also reduces the storage footprint by 30 to 35 percent, and RAM requirements by 7 percent.

Consolidating applications to fewer OS instances can generate savings of 40 percent or more on hardware alone. It also reduces the datacenter footprint, lowers energy and floorspace costs, and reduces software costs by consolidating to fewer processors (and most infrastructure software is licensed based on processors or cores).

“We’re very excited about the future of our partnership with Docker and using containers in our IT environment. With our success, we’re looking at driving containers further into our app infrastructure.”

- Rohit Tatachar,
Sr. Program Manager

Case Study: Consolidating Existing Apps with Docker Enterprise Edition and Azure Reduces Infrastructure Overhead at Microsoft

Key Challenges

- 90 percent of legacy apps in VMs, and 90 percent require legacy components.
- 25 percent of apps will sunset within 4 years.
- Existing apps consumed 80 percent of IT budget, limiting resources for new projects.

Results

- Migrated 10 applications from two different business units into containers running on the same host with fully isolated app environments.
- Standardized infrastructure that is 400 percent denser than without containers.
- Reduced overall infrastructure by 300 percent.

Flexibility to Move Applications to or from the Cloud

Migrate Apps to the Cloud in Minutes, Not Days or Weeks

Docker containers enable any app and its full configuration to be portable across platforms; they also work in the cloud without any changes. With Docker Enterprise Edition, organizations get just-in-time, on-demand cloud migration for existing applications. This also delivers the benefits of cloud — a pay-as-you-go, elastic use model — for any application that runs in Docker.

The flexibility to move applications into the cloud, across clouds, or back to the datacenter is key to supporting the digital transformation. Organizations need to be able to choose where to run applications and implement those decisions quickly.

Case Study: Lighting a New Spark of Innovation at MetLife with Docker Enterprise Edition and Microsoft Azure

Key Challenges

- Accumulated over 400 systems of record over last 150 years
- Customers and agents demand a modern experience, but it requires accessing code that is 30+ years old
- Large enterprise culture typically slow to innovate

Results

- Can scale quickly by leveraging Microsoft Azure to handle the 25x increase in traffic during annual open enrollment periods
- Increased resource utilization with up to 70% consolidation of their VMs
- More automation through orchestration allowing them to easily scale up a service or deal with VM/hardware failures

“Docker helped to change the culture at MetLife... (the team behind this) became antibodies to the status quo.”

- Aaron Ades, AVP,
Solutions Engineering

Accelerating business value and innovation with Docker Enterprise Edition



Ship 13X More Frequently



Application Availability and Reliability



Reduce Developer Onboarding Time by 65%



Proactively Manage Security Risk

Developer Productivity

Any developer will tell you they spend too much on unimportant work (which they often refer to as “yak shaving”), when they could be writing software. Developers waste a significant amount of time just setting up infrastructure and taking care of basics. It can take days or even weeks to get a single project started.

Even once projects are underway, troubleshooting problems plague development teams. It's difficult and time-consuming to replicate problems without exactly the same infrastructure stack. That usually means setting up multiple VMs just to support testing and troubleshooting efforts.

Developers effectively have to “wash, rinse, and repeat” for every new project since new infrastructure needs to be set up each time. When new languages or new stacks are involved, it adds even more complexity and time to projects.

Ship Software 13 Times More Frequently

Improve Developer Productivity And Empower Creativity

Docker Containers let developers eliminate the mundane work and enable greater productivity and creativity. With less mundane infrastructure to worry about, developer onboarding is 65% faster. In some cases, new developers can ship code on their first day.

Containers allow developers to isolate code and dependencies together without creating application conflicts with neighboring containers. That in turn give developers the freedom to choose the right tool or stack for the job, rather than being constrained by infrastructure or application compatibility concerns.

The end result — Developers can ship code 13 more frequently. Once Docker is deployed, subsequent projects are delivered much faster since the whole development pipeline is faster. Getting better software out the door faster creates a real competitive advantage for the business.

IT Operations Efficiency

Even with the advances in efficiency from virtualization and other technology, existing infrastructure and applications are still expensive to maintain. Upgrades, patching, testing and troubleshooting account for a significant slice of the IT workload. Meanwhile, a long list of new projects are constantly coming in.

Deploy IT Projects 4 Times Faster

Docker Enterprise enables 300 percent faster deployment for IT projects. Since teams spend much less time testing and don't need to manage as much infrastructure, they can focus their time on strategic projects. Customers like Visa can now provision resources in seconds rather than days or weeks.

Optimize IT Operations by a Factor of 10

IT can also streamline application maintenance and support. Docker Enterprise Edition simplifies the IT environment, making application updates and changes much easier since containers run independently of the infrastructure. In turn, that improves application reliability and availability, and makes it easier for IT to proactively manage security risks. Securing applications is easier when there are fewer variations involved.

“Cornell is decentralized. Docker’s become that common language we can talk. Now folks are using Docker and it’s much easier to collaborate on projects and ideas because we’re not getting hung up on specific language or idiosyncrasies.”

- Shawn Bower,
Cloud Architect

Case Study: Cornell University Aligns 14 Colleges On Cloud Strategy With Docker Enterprise Edition And Amazon Web Services

Key Challenges

- Campus-wide initiative to move to the cloud over next 5 years requires collaboration and a method that all 14 colleges can use
- Each of the 14 colleges is decentralized and has its own developer teams, but only one small central ops team
- Need a platform that can support the diverse variety of projects that the university supports

Results

- Increased collaboration across campus, dev teams working together, sharing images
- Saw 10x decrease in time spent maintaining applications
- Instead of a 10-page, multi-day setup process, new devs are up and running in one day
- 1,000+ containers running 32 containerized apps that range from traditional monolithic [backend financial systems] to new cloud-native [research] apps

Summary

Docker Enterprise Edition enables the digital transformation while bridging the gap between “legacy” and modern IT. With a single platform and supply chain to manage all applications, Docker Enterprise Edition provides a unifying layer across a diverse IT landscape of infrastructure, tools and applications. By saving time and money on the existing infrastructure and applications, organizations can reinvest the savings — both the time and money — in transforming the business.

Docker also helps both IT and development teams operate much more efficiently. Streamlined operations give organizations the agility they need to move the whole business faster and make the leap to the digital transformation.



www.docker.com

